SERVICE MANUAL

Portable 5-inch Black & White Television

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND, THE ⚠ MARK ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH **YOKO** PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY **YOKO** CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL.
FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

MODEL NO. F-6

SPECIFICATIONS

Sound:	5.5 MHz Intercarrier System
Intermediate Frequency:	Video I.F. 38.9 MHz Sound I.F. 33.4 MHz
Channel Coverage:	VHF, 2-12 CH (VL: 2-4 CH, VH: 5-12 CH) UHF, 21-69 CH
C.R.T. Anode H.V.	8KV (max)
Output Power	500mW (MAX)
Power Source:	AC-Adaptor 220V 50Hz (DC. 12V: Car battery.) Dry battery
Power Consumption:	DC 8.0W (Average)
Antenna:	Telescopic Antenna for UHF/VHF
Picture Tube:	140AJB4 (A), 5-Inch 70° Deflection
Speaker:	2.5-Inch 16-ohm 1W
Dimensions:	148(H)×140(W)×220(D) m/m 5.83(H)×5.5(W)×8.66(D) inch
Weight:	Approx. 1.4 Kg

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5mA (500 microamperes). Leakage current can be meassured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturer's instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground.
If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle, and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

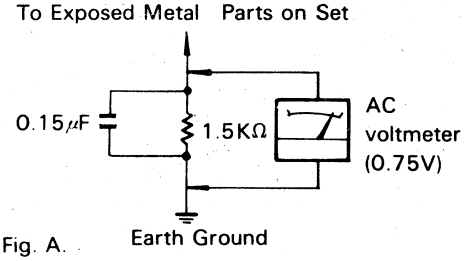


Fig. A. Using an AC voltmeter to check AC leakage.

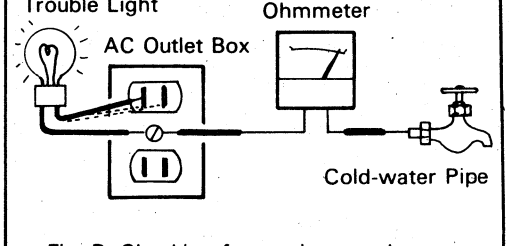
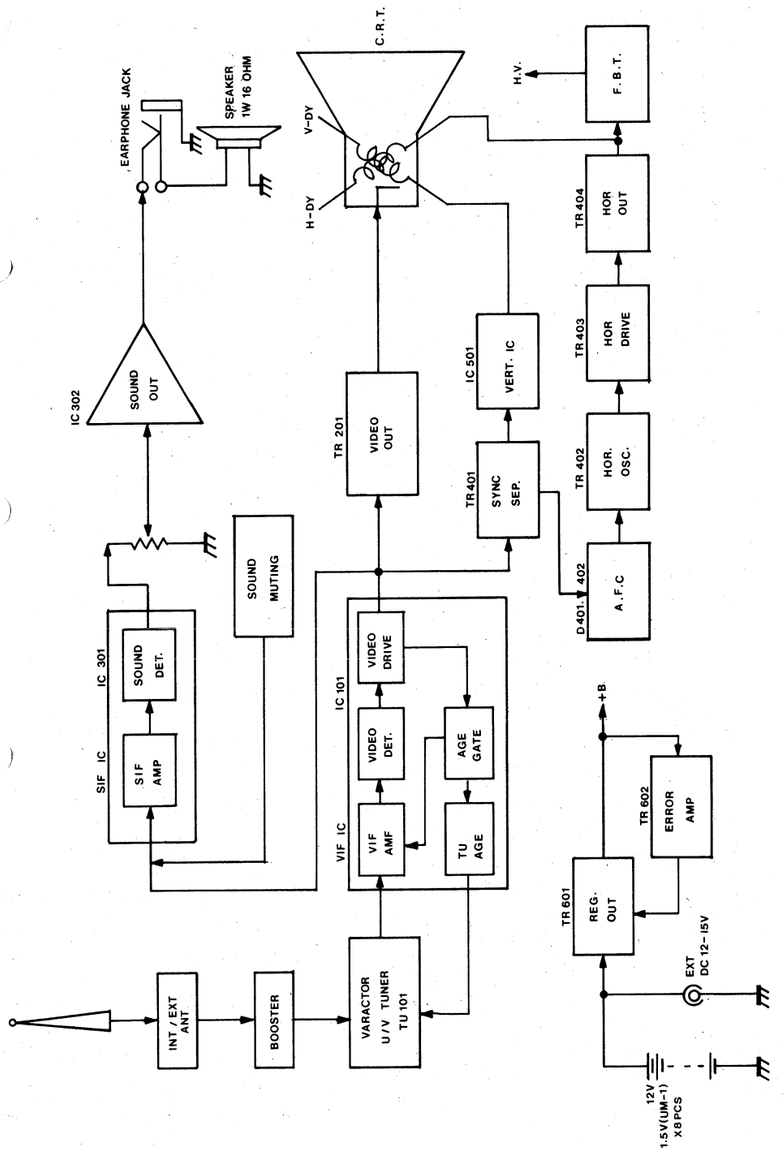


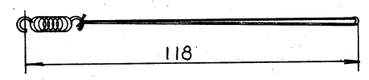
Fig. B. Checking for earth ground.

BLOCK DIAGRAM

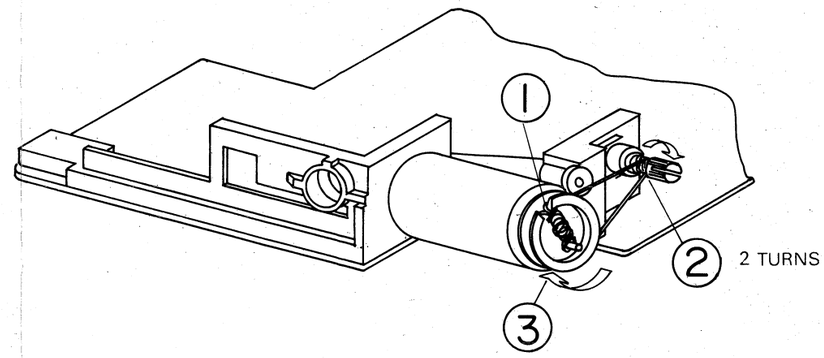


ASSEMBLY OF TV DIAL CORD

circuit numbers indicate sequence.

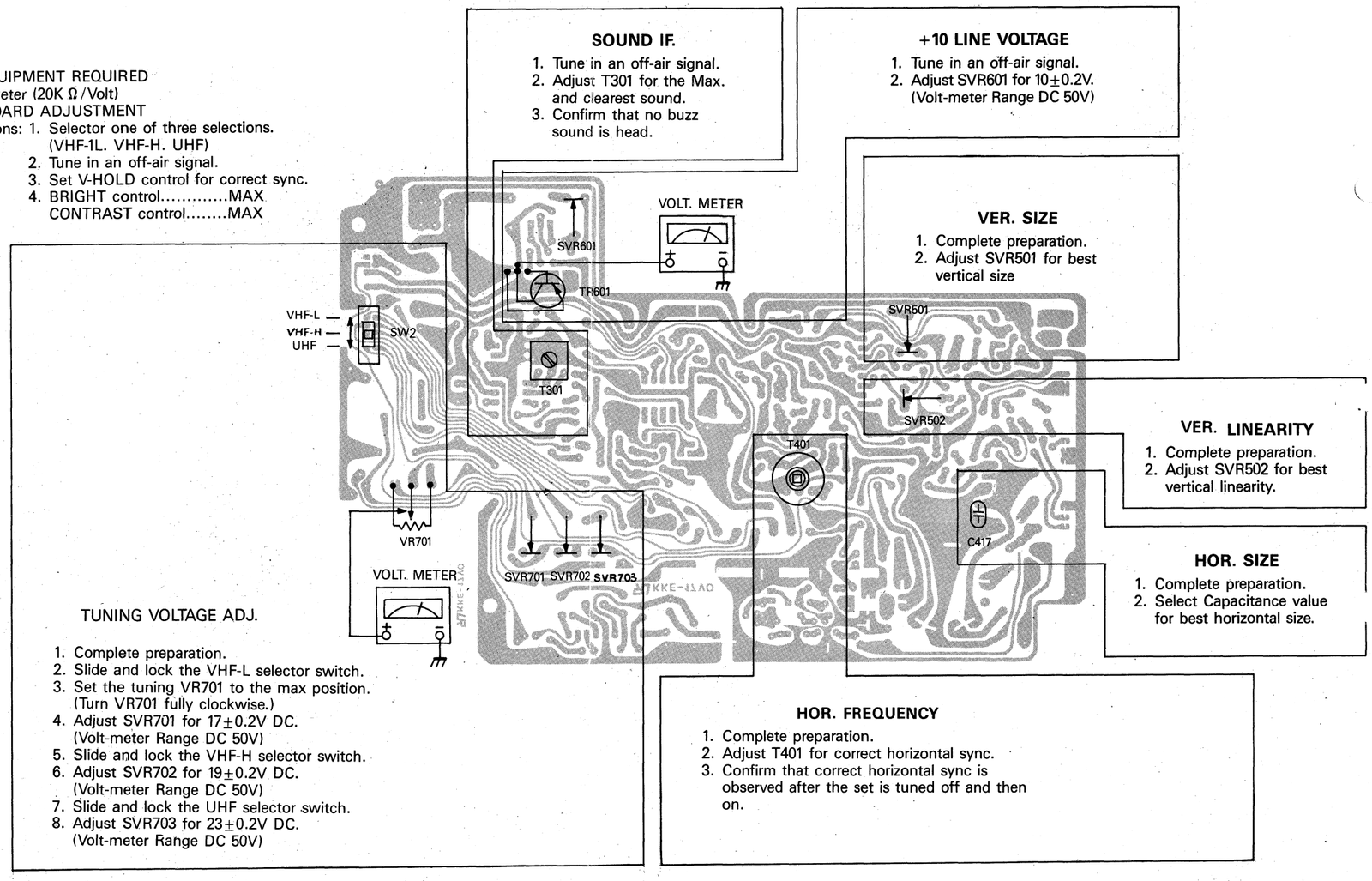


DIAL CORD (0.5ϕ)



CIRCUIT ADJUSTMENTS

1. TEST EQUIPMENT REQUIRED
   DC Voltmeter (20K Ω/Volt)
2. MAIN BOARD ADJUSTMENT
   Preparations: 1. Selector one of three selections. (VHF-1L. VHF-H. UHF)
   2. Tune in an off-air signal.
   3. Set V-HOLD control for correct sync.
   4. BRIGHT control.....MAX
      CONTRAST control.....MAX



SOUND IF.

1. Tune in an off-air signal.
2. Adjust T301 for the Max. and clearest sound.
3. Confirm that no buzz sound is head.

+10 LINE VOLTAGE

1. Tune in an off-air signal.
2. Adjust SVR601 for 10±0.2V. (Volt-meter Range DC 50V)

VER. SIZE

1. Complete preparation.
2. Adjust SVR501 for best vertical size

VER. LINEARITY

1. Complete preparation.
2. Adjust SVR502 for best vertical linearity.

HOR. SIZE

1. Complete preparation.
2. Select Capacitance value for best horizontal size.

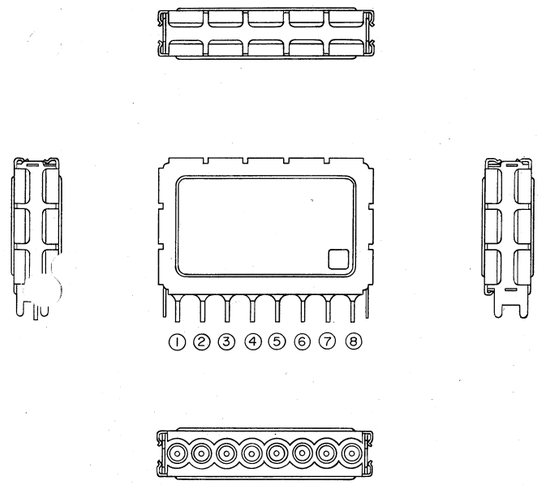
TUNING VOLTAGE ADJ.

1. Complete preparation.
2. Slide and lock the VHF-L selector switch.
3. Set the tuning VR701 to the max position. (Turn VR701 fully clockwise.)
4. Adjust SVR701 for 17±0.2V DC. (Volt-meter Range DC 50V)
5. Slide and lock the VHF-H selector switch.
6. Adjust SVR702 for 19±0.2V DC. (Volt-meter Range DC 50V)
7. Slide and lock the UHF selector switch.
8. Adjust SVR703 for 23±0.2V DC. (Volt-meter Range DC 50V)

HOR. FREQUENCY

1. Complete preparation.
2. Adjust T401 for correct horizontal sync.
3. Confirm that correct horizontal sync is observed after the set is tuned off and then on.

PICTORIAL VIEW & SCHEMATIC DIAGRAM OF VHF TUNER (UVE 8)



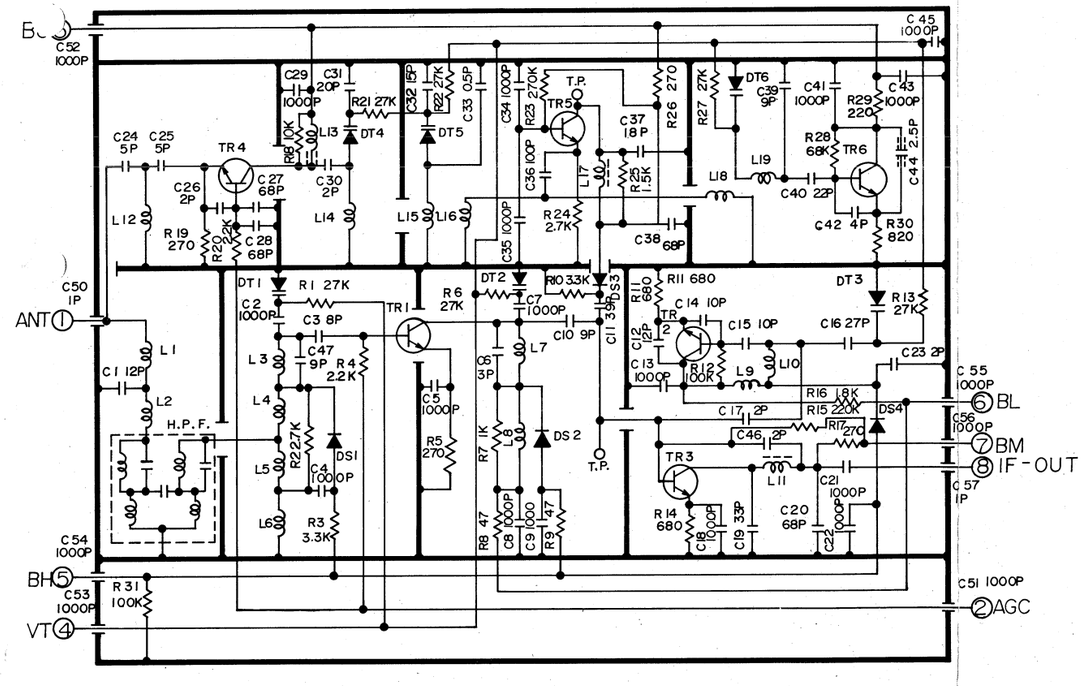
Mode \ Supply Volt	BU	BH	BL	BM
VHF Low CH	Open	Open	9	9
VHF High CH	Open	9	Open	9
UHF	9	Open	Open	9

Terminal	1	2	3	4	5	6	7	8
Terminal Name	V/U ANT	AGC	BU	VT	BH	BL	BM	IF

NOTE

Tr1 : 2SC3374, 2SC3122, 2SC3493 or EQUIVALENT
Tr2 : 2SC2735 or EQUIVALENT
Tr3 : 2SC2733 or EQUIVALENT
Tr4 : 2SC3077, 2SC2758, 2SC3119 or EQUIVALENT
Tr5 : 2SC2732, 2SC3077 or EQUIVALENT
Tr6 : 2SC2734, 2SC2759 or EQUIVALENT

Dt1—3: 1SV141, 1T32, 1SV113 or EQUIVALENT
Dt4—6: 1SV136, 1T32 or EQUIVALENT
Ds1—4: 1SS168, 1SS110 or EQUIVALENT

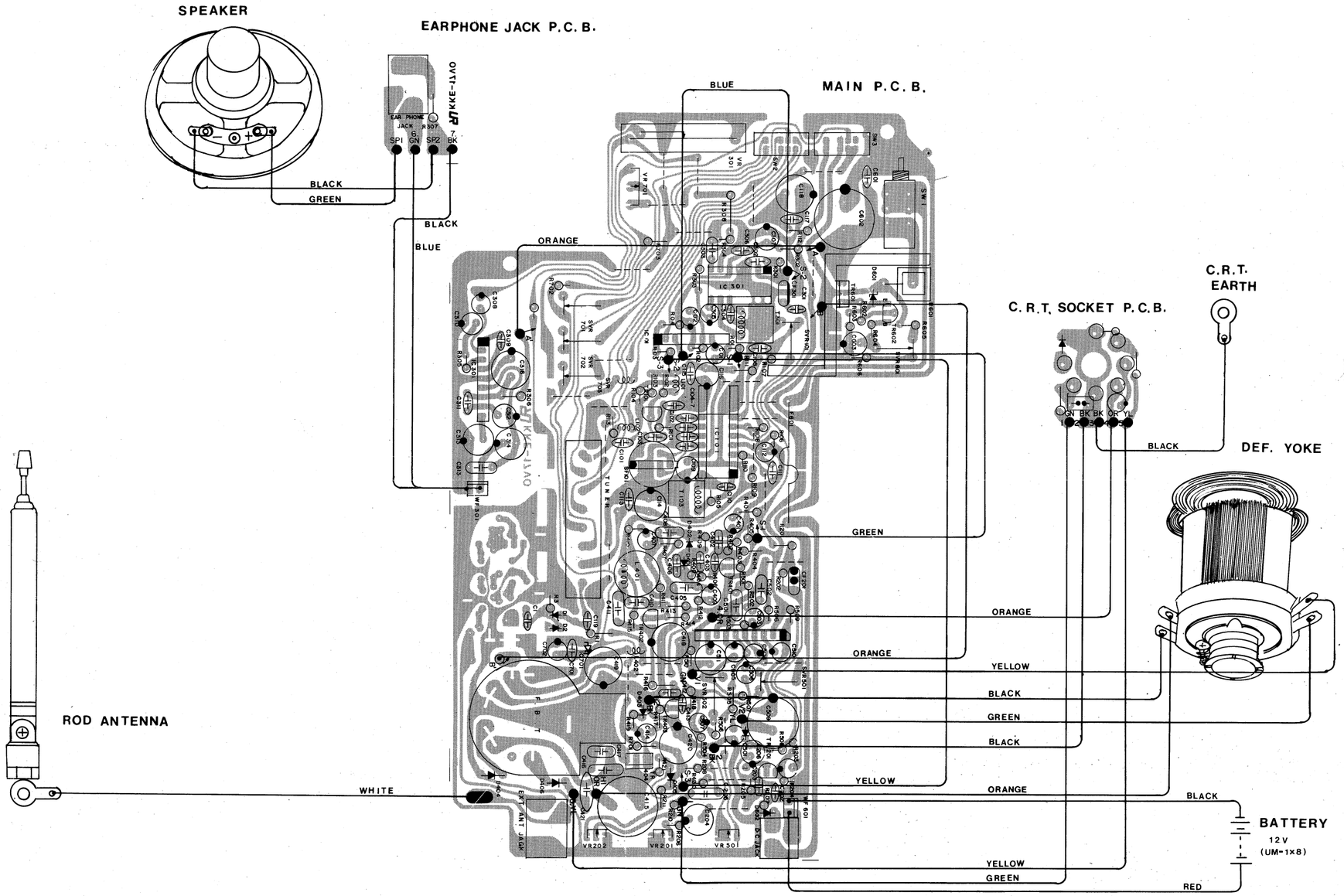


Supply voltage (V)

Term.	ch	VHF Lo.	VHF Hi	UHF
7	BM	9	9	9
6	BL	9	Open	Open
5	BH	Open	9	Open
3	BU	Open	Open	9

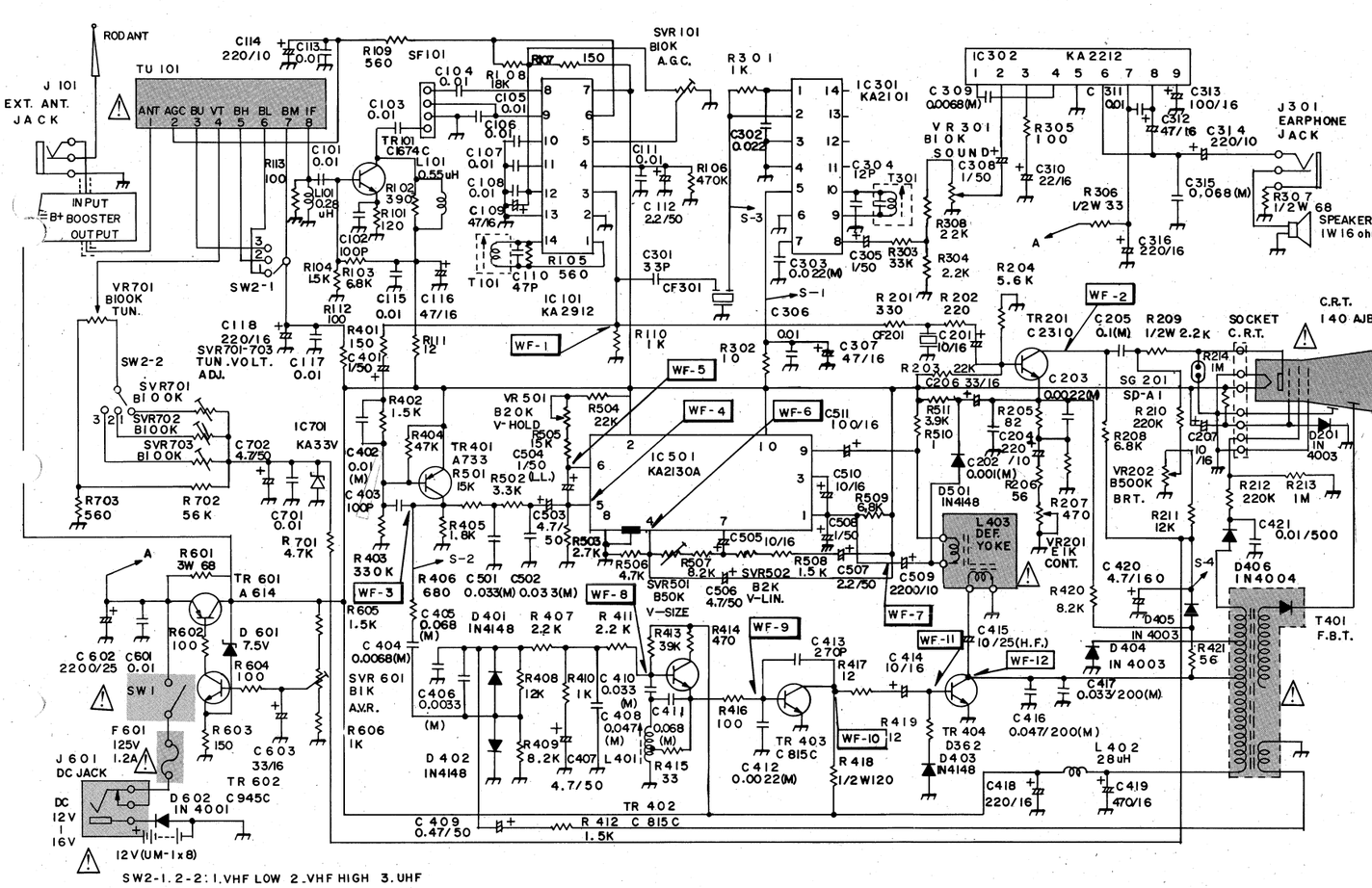
All Capacitance Value; Farad
All Resistance Value; Ohm
PIF: 38.9 MHz
SIF: 33.4 MHz

MOUNTING DIAGRAM

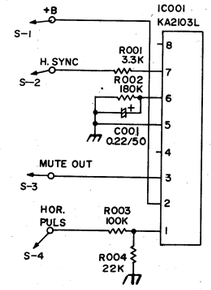


SCHEMATIC DIAGRAM

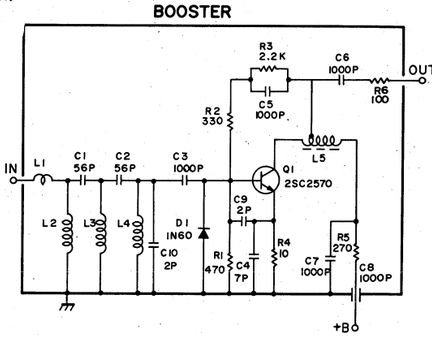
Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.



SOUND MUTING

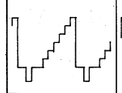
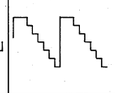
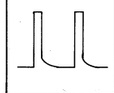
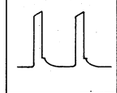
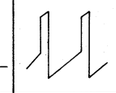
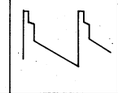
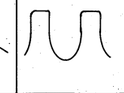
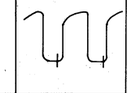
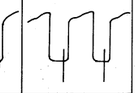
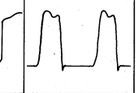


BOOSTER



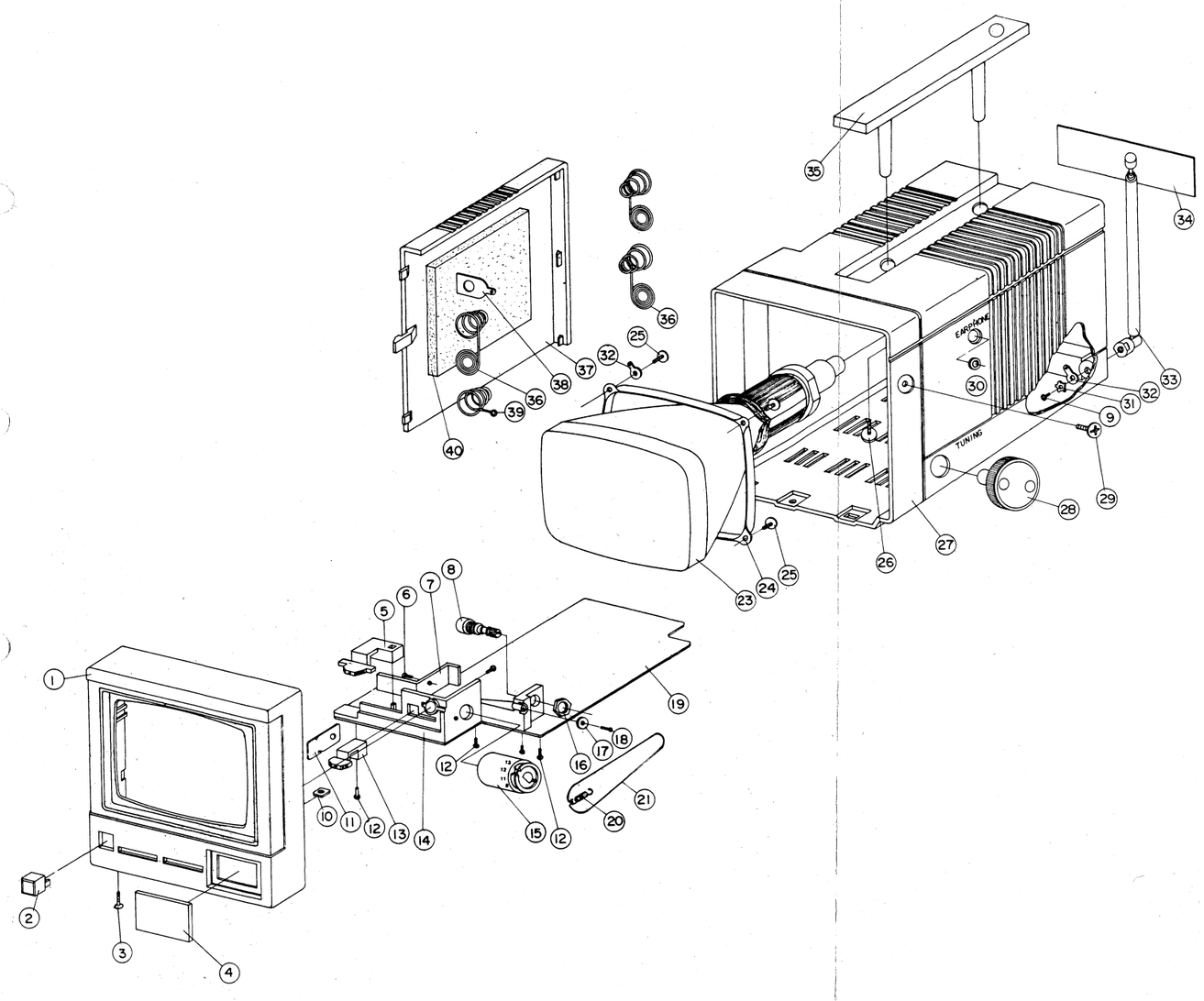
NOTES

1. RESISTOR VALUES ARE IN Ω(OHM) K = 1,000Ω M = 1,000,000Ω.
2. ALL RESISTORS ARE 1/4 WATT EXCEPT WHERE OTHERWISE INDICATED.
3. CAPACITOR VALUES ARE IN μF UNLESS OTHERWISE INDICATED. P = PF.
4. ALL CAPACITORS ARE 50 VOLTS EXCEPT WHERE OTHERWISE INDICATED.
5. VOLTAGES AND WAVEFORMS MEASURED UNDER AVERAGE COLOR SIGNAL INPUT AND CONTRAST, BRIGHTNESS CONTROL AT MAXIMUM.
6. THIS SCHEMATIC IS THE LATEST AT TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT ANY NOTICE.

WF—1	WF—2	WF—3	WF—4	WF—5	WF—6	WF—7	WF—8	WF—9	WF—10	WF—11	WF—12
											
1.2Vp-p	30Vp-p	9.7Vp-p	2.8Vp-p	5.5Vp-p	4.2Vp-p	9.8Vp-p	3Vp-p	1.5Vp-p	4.2Vp-p	3Vp-p	70Vp-p

EXPLODED VIEW

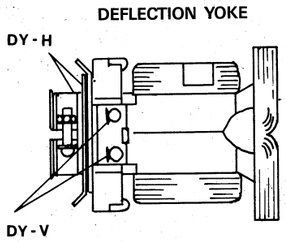
Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.



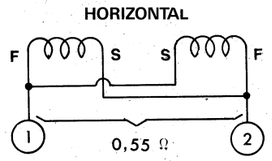
NO.	DENOMINATION	Q'TY	MATERIAL PARTS NO.	
1	BEZEL	1	ABS	
2	POWER KNOB	1	ABS	
3	TAPPING SCREW	1	FH T3×12 BLACK	
4	DIAL WINDOW	1	ACRYL	
5	SLIDE KNOB "B"	1	ABS	
6	TAPPING SCREW	1	PH T3×5	Zn Plating
7	HEAT SINK	1	AL t=2.0	
8	TUNING SHAFT ASS'Y	1	BsBM	
9	MACHINE SCREW	1	PH M3×12	Zn Plating
10	SET HOLDER	1	SBHG t=1.0	
11	BEZEL GUIDE BRACKET	2	SBHG t=1.0	
12	TAPPING SCREW	4	PH T3×8	Zn Plating
13	VOLUME KNOB	1	ABS	
14	CHASSIS	1	ABS	
15	TUNING DRUM	1	ABS	
16	PLAN NUT	1	M7	
17	ROLLER	1	ABS	
18	ROLLER SHAFT	1	EYELET 1.5×7	
19	P.C.B			
20	DRUM SPRING	1	PWR o0.5	
21	DIAL CORD	1	NYLON	
22				
23	CATHODE RAY TUBE	1		
24	C.R.T. BAND	1	SBHG t=0.5	
25	TAPPING SCREW	5	PH T3×12	Zn Plating
26	HANDLE SCREW	2	M3×12	Zn Plating
27	BACK CABINET	1	HiPS	
28	TUNING KNOB	1	ABS	
29	MACHINE SCREW	3	BH M3×6	BLACK
30	JACK NUT	1		
31	TOOTHED WASHER			
32	LUG	1		
33	ROD ANTENNA	1		
34	SPEC PLATE	1	AL t=0.5	
35	HANDLE	1	HiPS	
36	BATTERY SPRING "A"	3	SUS o1.0	
37	BATTERY COVER	1	HiPS	
38	BATTERY CONTACT	1	BsP t=0.5	Ni Plating
39	BATTERY SPRING "B"	1	PWR o1.0	Ni PLATING
40	BATTERY CUSHION	1	SPONGE	GRAY

DC RESISTANCE AND WINDING DIAGRAM FOR COIL

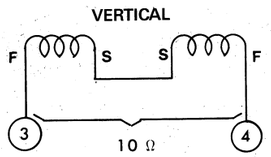
DEFLECTION YOKE



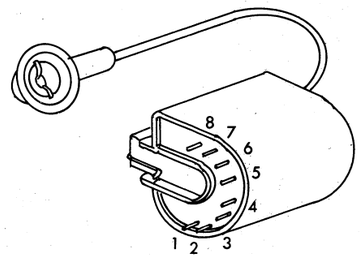
HORIZONTAL

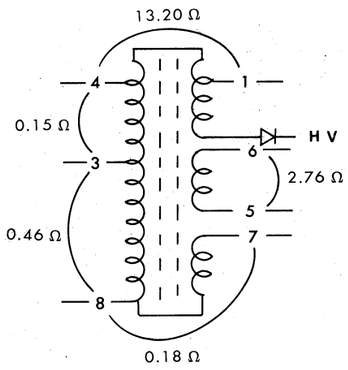


VERTICAL



FLY BACK TRANSFORMER





PARTS LIST

Note: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Q'ty
TUNER & CIRCUIT BOARDS			
TU101		UVE 8-E01	1
		PCB-Main	1
		PCB-E.J.	1
		PCB-CRT Socket	1
ICS			
IC101	3-012-291-252	KA2912 or	1
	3-012-136-6C2	UPC1366C	
IC301	3-012-210-1S2	KA2101 or	1
	3-012-136-5A2	LA1365	
IC302		KA2212 or KIA 7313P or LA4182	1
IC501		KA2130A or TA7242 or LA1385 or UPC1031H2	1
	3-009-33V-OS4	KA33V or	1
	3-009-574-JC4	UPC574J	
TRANSISTORS			
TR101	3-242-167-418	KSC1674C-O/Y or	1
	3-242-192-318	KTC1923-O/Y	
TR201	3-236-231-019	KSC2310-Y or	1
	3-236-222-919	KTC2229A-Y	
TR402	3-236-081-518	KSC815C-O/Y or	2
TR403	3-236-195-918	KTC1959-O/Y	
TR401		KSA 733C-O/Y or KTA1015-O/Y	1
TR601	3-225-061-41C	KSA614-O/Y or	1
	3-225-083-41C	KTB834-O/Y	
TR602	3-239-094-518	KSC945C-O/Y or	1
	3-239-181-518	KTC1815A-O/Y	
TR404	3-245-036-24C	KSD362 or	1
	3-245-223-303C	KTC2233	
DIODES (1)			
D401 D402 D403 D501	3-659-414-803F	IN4148	4
D602	3-657-400-103F	IN4001	1
D201 D404 D405	3-657-400-303F	IN4003	3
D406	3-657-400-403F	IN4004	1
DIODE (2) ZENER			
D601	3-662-AZ7-503F	05 AZ 7.5 or	1
	3-662-75E-B03F	RD 7.5 EB3	
TRANSFORMERS & FILTERS			
T101	4-112-368-414	VIF-T (DET)	1
T301	4-112-5R5-414	SIF-T (DET)	1
T401		FLYBACK TRANSFORMER	1 ⚠
SAF101	8-215-389-101	SAF38.9 MH52P	1
CF201	8-119-5R5-101	TPS 5.5MA	1
CF301	8-118-5RS-101	SFE 5.5B	1
COILS			
L401		HOR, OSC	1
L403		Deflection Yoke	1
L101	4-111-R55-424	0.55 uH	1
L102	4-111-R28-424	0.28 uH	1
L402	4-111-286-424	28 uH	1
CAPACITORS			
All capacitors are in uF and ceramic unless otherwise noted. 50WV or less are not indicated except for electronics, pF = uuF, E = electrolytic capacitor, M = mylar capacitor, C = ceramic capacitor, L,L. = low leakage, **H.F. = high frequency**			
C304	2-11D-120-541	12 pF	1
C301	2-11D-330-541	33 pF	1
C110	2-11D-470-541	47 pF	1
C102 C403	1-11D-101-541	100 pF	2
C413	2-111-271-541	270 pF	1
C101 C103 C104 C105 C106 C107 C108 C111 C113 C115 C117 C306 C311 C601 C701	2-115-103-581	0.01	15
C302	2-115-223-581	0.022	1
C421	2-111-103-A51	0.01 500V	1
C203 C412	2-31F-222-751	0.0022 100V.M	2
C404 C309	2-31F-682-751	0.0068 100V.M	2
C406	2-31F-332-751	0.0033 100V.M	1
C303	2-31F-223-751	0.022 100V.M	1
C501 C502 C410	2-31F-333-751	0.033 100V.M	3
C408	2-31F-473-751	0.047 100V.M	1

Ref. No.	Part No.	Description	Q'ty
C405			
C411	2-31F-683-741	0.068 100V.M	3
C315			
C202	3-31F-102-751	0.001 100V.M	1
C205	3-31F-104-741	0.1 100V.M	1
C402	3-31F-103-751	0.01 100V.M	1
C417	3-31F-333-951	0.033 200V.M	1
C416	3-31F-473-951	0.047 200V.M	1
C409	2-21F-474-581	0.47 E	1
C305			
C308	2-21F-105-581	1 E	4
C401			
C508			
C112	2-21F-225-581	2.2 E	2
C507			
C407			
C503			
C506	2-21F-475-581	4.7 E	4
C701			
C201			
C414			
C505	2-21F-106-281	10 16V.E	5
C510			
C207			
C310	2-21F-226-281	22 16V.E	1
C206	2-21F-336-281	33 16V.E	2
C603			
C109			
C116	2-21F-476-281	47 16V.E	4
C307			
C312			
C313	2-21F-107-281	100 16V.E	2
C511			
C204			
C314	2-21F-227-181	220 10V.E	3
C114			
C118			
C316	2-21F-227-281	220 16V.E	3
C418			
C419	2-21F-477-281	470 16V.E	1
C509	2-21F-228-181	2200 10V.E	1
C602	2-21F-228-381	2200 25V.E	1
C420	2-24F-475-881	4.7 160V.E	1
C415		10 25V. HF	1
C504		1 16V L.L.	1

RESISTORS

- All Resistors are in ohms (1/4 W), Unless otherwise noted.
- All Variable and adjustable resistors have characteristic curve B,
- Unless otherwise noted.

KΩ: 1000 , MΩ = 1000000Ω

VR202		B500K BRIGHT	1
VR201		25CIK CONTRAST	1
VR501		B20K V-HOLD	1
VR701		B100K TUNING	1
VR301		B10K SOUND	1

Ref. No.	Part No.	Description	Q'ty
SVR601	7-213-102-1AO	B1K AVR	1
SVR502	7-213-202-1AO	B2K V-LINEARITY	1
SVR101	7-213-103-1AO	B10K AGC	1
SVR501	7-213-503-1AO	B50K V-SIZE	1
SVR701			
SVR702	7-213-104-1AO	B100K TUNING VOLTAGE	3
SVR703			
R510	1-101-1RO-362	1	1
R302	1-101-100-362	10	1
R111			
R417	1-101-120-362	12	3
R419			
R112	1-101-330-362	33	2
R415			
R206	1-101-560-362	56	2
R421			
R205	1-101-820-362	82	1
R305			
R146			
R113	1-101-101-362	100	5
R602			
R604			
R101	1-101-121-362	120	1
R107			
R603	1-101-151-362	150	3
R401			
R202	1-101-221-362	220	1
R201	1-101-331-362	330	1
R102	1-101-391-362	390	1
R207			
R414	1-101-471-362	470	2
R107			
R103	1-101-561-362	560	3
R109			
R406	1-101-681-362	680	1
R110			
R301	1-101-102-362	1K	4
R410			
R606			
R104			
R402			
R412	1-101-152-362	1.5K	5
R605			
R508			
R405	1-101-182-362	1.8K	1
R407			
R411	1-101-222-362	2.2K	3
R304			
R503	1-101-272-362	2.7K	1
R502	1-101-332-362	3.3K	1
R511	1-101-392-362	3.9K	1
R506			
R701	1-101-472-362	4.7K	2
R204	1-101-562-362	5.6K	1
R103			
R208	1-101-682-362	6.8K	3
R509			

Ref. No.	Part No.	Description	Q'ty
R409			
R420	1-101-822-362	8.2K	3
R507			
R408			
R211	1-101-123-362	12K	2
R505			
R501	1-101-153-362	15K	2
R108	1-101-183-362	18K	1
R203			
R308	1-101-223-362	22K	3
R504			
R303	1-101-333-362	33K	1
R413	1-101-393-362	39K	1
R404	1-101-473-362	47K	1
R702	1-101-563-362	56K	1
R210			
R212	1-101-224-362	220K	2
R403	1-101-334-362	330K	1
R106	1-101-474-362	470K	1
R213			
R214	1-101-105-362	1M	2
R306	1-101-330-462	1/2W 33	1
R307	1-101-680-462	1/2W 68	1
R418	1-101-121-462	1/2W 120	1
R209	1-101-222-461	1/2W 2.2K	1
R601	1-106-680-760	3W 68 cement	1

MISCELLANEOUS

⚠	J601	5-512-212	DC JACK	1
	J301		EARPHONE JACK	2
	J101		EXTANT JACK ROD ANT	1
		5-514-411	CRT SOCKET	1
	SG201	2-BIF-102-D01	SPARK GAP	1
⚠	F601		FUSE (1.2A 125V)	1
			CATHODE RAY TUBE 140AJB4 (A)	1
			SPEAKER (SP-666) 21/2" 1W 16 ohm	1
	SW2		SELECTOR SW KSA-2340A	1
⚠	SW1		PUSH POWER SW KPM1-022 SNOL	1

BOOSTER/SOUND MUTING SECTION

SEMICON DUCTORS

IC001	3-012-210-3S2	KA 2103L	1
Q1	2-238-257-018	2SC2570	1
D1	3-659-IN6-003F	IN60S	1

COILS

Ref. No.	Part No.	Description	Q'ty
L1	4-113-1R5-424	Spring Coil	1
L2	4-125-3R0-424	Spring Coil	1
L3	4-113-3R0-424	Spring Coil	1
L4	4-125-3R0-424	Spring Coil	1
L5		Balun Coil	1

CAPACITORS

All Capacitors are in uF
C: Ceramic Capacitor
E: Electrolytic Capacitor

C9	2-11D-2R0-541	2pF 50V.C	2
C10			
C4	2-11D-7R0-541	7pF 50V.C	
C1			
C2	2-11D-560-541	56pF 50V.C	2
C3			
C5	2-11D-102-541	1000pF 50V.C	4
C6			
C7			
C8	2-11H-102-574	1000pF 50V.C	1
C001	1-21F-224-581	0.22uF 50V.E	1

RESISTORS

All resistors are in ohms

R1	1-101-100-161	1/8W 10	
R6	1-101-101-161	1/8W 100	1
R5	1-101-271-165	1/8W 270	1
R2	1-101-331-161	1/8W 330	1
R1	1-101-471-161	1/8W 470	1
R3	1-101-222-161	1/8W 2.2K	1
R001	1-101-332-362	3.3K	1
R002	1-101-184-362	180K	1
R003	1-101-104-362	100K	1
R004	1-101-223-362	22K	1